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PATENT COOPERATION TREATY

PCT/EP2003/008119



Translation

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2707II PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/008119	International filing date (day/month/year) 24 July 2003 (24.07.2003)	Priority date (day/month/year) 29 July 2002 (29.07.2002)
International Patent Classification (IPC) or national classification and IPC F16D 65/56		
Applicant KNORR-BREMSE SYSTEME FÜR NUTZFAHRZEUGE GMBH		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>4</u> sheets.</p>	
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input checked="" type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>	

Date of submission of the demand 22 December 2003 (22.12.2003)	Date of completion of this report 04 November 2004 (04.11.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/008119

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages 1-14, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages 1-21, filed with the letter of 20 October 2004 (20.10.2004)
- ☒ the drawings:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages 1/7-7/7, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☒ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☐ not complied with for the following reasons:

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos. _____

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PCT/EP 03/08119

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-21	YES
	Claims		NO
Inventive step (IS)	Claims	14, 18	YES
	Claims	1-13, 15-17, 19-21	NO
Industrial applicability (IA)	Claims	1-21	YES
	Claims		NO

2. Citations and explanations

1. This report makes reference to the following documents:

- D1: DE 94 10 454 U (LUCAS INDUSTRIES), 2 November 1995 (1995-11-02)
- D2: EP-A-1 160 476 (HALDEX BRAKE PRODUCTS), 5 December 2001 (2001-12-05)
- D3: DE 197 06 298 A (LUCAS INDUSTRIES), 16 October 1997 (1997-10-16)
- D4: DE 39 19 179 A (LUCAS INDUSTRIES), 13 December 1990 (1990-12-13)
- D5: US-A-5 722 516 (FORNI ET AL.), 3 March 1998 (1998-03-03)
- D6: WO 02/14125 A (KNORR-BREMSE SYSTEME FÜR NUTZFAHRZEUGE), 21 February 2002 (2002-02-21)
- D7: WO 01/36837 A (SKF ENGINEERING AND RESEARCH CENTRE), 25 May 2001 (2001-05-25)
- D8: US-A-3 486 589 (HILLEGASS), 30 December 1969 (1969-12-30)

Document D3 was not cited in the international search report. A copy of that document is attached.

2. The present application does not meet the

requirements of PCT Article 33(1) because the subject matter of claims 1 and 19 does not involve an inventive step (PCT Article 33(3)).

3. Claim 1:

3.1 Document D1 is considered to constitute the prior art closest to the subject matter of claim 1 and discloses (the references in parentheses are to that document):

a pneumatically (page 6, line 3) actuated disk brake for an utility vehicle having

- a) a calliper that grips over a brake disk,
- b) at least one application device (10) arranged in the brake calliper for applying a force to the disk brake,
- c) at least one re-adjusting device arranged in the brake calliper to compensate the wear of the brake lining and/or brake disk by adjusting the distance between at least one brake lining (3, 4) and the brake disk, the re-adjusting device comprising two axially movable re-adjusting elements (34) each having a compression piece (zone of the element (34) with enlarged diameter; page 3, lines 34, 35);
- d) the two re-adjusting elements of the at least one re-adjusting device being secured against rotation (page 3, last line) by their zone facing the corresponding brake lining to a common connection plate (48), and
- f) the connection plate being designed as a thermal insulation plate (478) sized to cover to a large extent the opening of a mounting chamber in the brake calliper in which the re-

adjusting device is placed.

3.2 This type of brake is also known from D2 (in which the connection plate necessarily also acts as a thermal insulation plate, even if this is unintended) and D3 (see, in particular, column 2, lines 8-11, and figures 1, 4 and 5).

3.3 The subject matter of claim 1 therefore differs from the known brakes in that:

- e) a heat-insulating layer in one or several parts is applied to the face of the connection plate and/or compression piece that faces the corresponding brake lining.

This reduces heat transfer towards the inside of the brake calliper and hence can be considered to be the problem addressed.

3.4 The solution proposed in claim 1 cannot be considered inventive (PCT Article 33(3)) because the use of heat-insulating layers to reduce heat transfer is a generally known and conventional measure (see, for example, D4) which a person skilled in the art would readily apply to a brake as per D1, D2 or D3.

4. Claim 19 (if dependent on the preamble of claim 1):

4.1 Document D5 is considered to constitute the prior art closest to the subject matter of claim 19 and discloses (the references in parentheses are to that document):

a disk brake for an utility vehicle having

- a) a brake calliper (not illustrated but necessarily present) that grips over a brake disk (36),
- b) at least one application device (24) arranged in the brake calliper for applying a force to the disk brake,
- c) at least one re-adjusting device (26, 28, 44) arranged in the brake calliper to compensate the wear of the brake lining and/or brake disk by adjusting the distance between at least one brake lining (32, 34) and the brake disk, the re-adjusting device comprising two axially movable re-adjusting elements (28) each having a compression piece,

and in addition

- d) the two re-adjusting elements of the at least one re-adjusting device are secured against rotation (column 2, lines 60, 61) to a common connection plate (30) by their zone facing the corresponding brake lining, and
- the compression pieces and lining supports (32) are interconnected (column 2, lines 23, 25: "secured to...") in such a way that
- the withdrawal (column 2, lines 27, 28: "kept slightly out of contact...") of the brake linings is ensured when the re-adjusting elements are turned back and the brake is loosened.

4. The subject matter of claim 19 thus differs from that known brake only in that the disk brake is pneumatically and/or electromechanically actuated. However, both types of actuation are generally known (and have no technical relationship with the claimed

connection between the compression piece and lining support). The subject matter of claim 19 therefore does not involve an inventive step.

5. Dependent claims 2-13, 15-17, 19 ("according to one of the preceding claims"), 20 and 21 evidently do not contain any features which, in combination with the features of any claim to which they refer, meet the PCT novelty and inventive step requirements. The reasons therefor are as follows:

5.1 The subject matter of claims 2, 5 and 7 is suggested by the combination of documents D2 and D4.

5.2 D6 describes a brake having the additional features of claims 3 and 4.

5.3 Claim 6: ceramic is a generally known heat-insulating material; see, for example, D7.

5.4 Claim 19 (if dependent on one of the preceding claims):
The same explanations as in point 4 apply; the claimed connection between the compression piece and the lining support can be applied to a brake as per D1, D2 or D3 without an inventive step.

5.5 Claim 20: D5 does not mention how the compression piece and the lining support are interconnected, and hence a person skilled in the art would seek for corresponding solutions in the prior art.

He would find in D8 a suitable connection (having the additional features of claim 20) and apply it to a brake of the type known from D8. He would thus

arrive at the subject matter of claim 20 without being inventive.

- 5.6 Claim 21 relates only to an obvious modification of the connection between compression piece and lining support which is known from D8.
- 5.7 Claims 9-14 and 15-17 appear to relate only to minor structural details; the subject matter of these claims thus evidently does not involve an inventive step.
6. The prior art neither describes nor suggests the subject matter of claim 14 (which enables the compression plate to be easily mounted) and claim 18 (which enables the heat-dependent expansion of the connection plate to be compensated).
7. The subject matter of claims 1-21 can be produced and is thus industrially applicable under PCT Article 33(4).